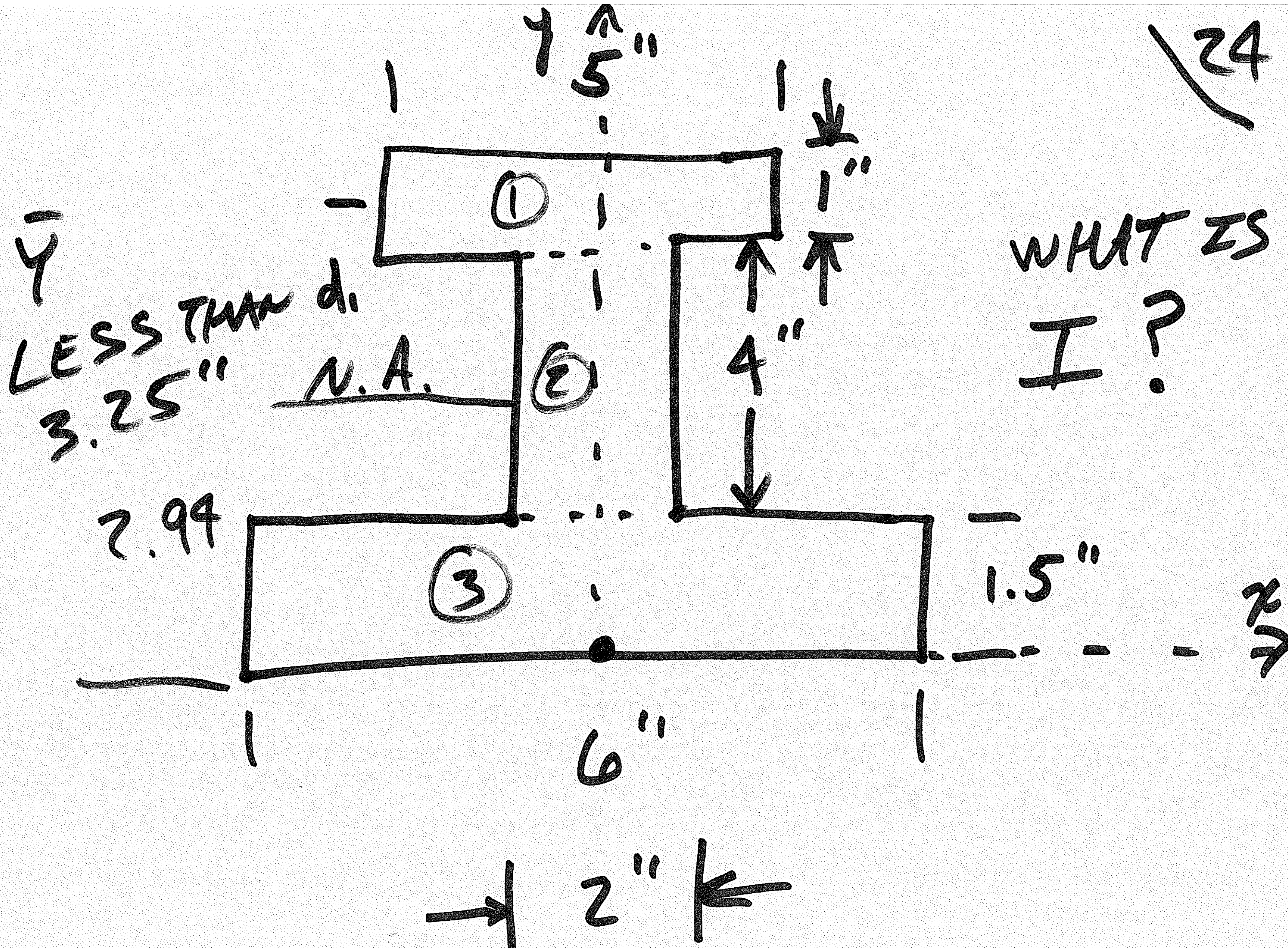
	$\bar{Y}$	A	$\bar{Y}A$
①	$\frac{1}{3}(85\text{X}) = 28\text{3}$	$\frac{1}{2}(85\text{X})(713) = 3\text{X}3,8\text{25}$	85, 857, X03
②	$\frac{1}{2}(85\text{X}) = 425$	$(85\text{X})(9\text{28}) = 788,8\text{XX}$	3 35, 24X, 0XX
③	$\frac{1}{3}(8\text{5X}) = 28\text{3}$	$\frac{1}{2}(85\text{X})(3\text{X}9) = 131,325$	37, 208, 75X
		1, 223, 15X	458, 3X5, 833.

$$\bar{Y} = \frac{\Sigma \bar{Y} A}{\Sigma A} = \frac{458, 3\text{X}5, 833}{1, 223, 15\text{X}}$$

$\bar{Y} = 375\ mm$

$\bar{X} = 1064\ mm$

24



WHAT IS

I ?

	$\bar{Y}$	A	$\bar{Y}A$
①	$\frac{1.5+4+\frac{1}{2}}{6} =$	$5 \times 1 = 5$	30
②	$1.5+\frac{4}{2} = 3.5$	$2 \times 4 = 8$	28
③	$\frac{1.5}{2} = .75$	$1.5 \times 6 = 9$	6.75
		22	64.75

$$\bar{Y} = \frac{64.75}{22} = \boxed{2.94''}$$

$$I = \bar{I} + Ad^2$$

$$= \frac{bh^3}{12}$$

DIST FROM ELEMENT $\bar{Y}$ TO $\bar{Y}$

$$I_1 = \frac{b_1 h_1^3}{12} + A_1 d_1^2$$

$$I_1 = \frac{5(1)^3}{12} + 5(6 - 2.94)^2 = 47.23$$

$$I_2 = \frac{b_2 h_2^3}{12} + A_2 d_2^2$$

$$= \frac{2(4)^3}{12} + 8(3.5 - 2.94)^2$$

$$= 13.18$$

$$I_3 = \frac{b_3 h_3^3}{12} + A_3 d_3^2$$

$$= \frac{6(1.5)^3}{12} + 9(.75 - 2.94)^2$$

$$I_3 = 44.85$$

$$I = I_1 + I_2 + I_3$$

$$= 47.23 + 13.18 + 44.85$$

$$\boxed{I = 185.26 \text{ A}}$$

↳ DID NOT WORK OUT

END STATICS BREAK

	$\bar{X}$	m	$\bar{X}m$
SPHERE ①	$1+6+1=8$	64.4	515
ROD ②	$1+\frac{6}{2}=4$	32.2	128.8
CYLINDER ③	∅	64.4	∅
		161	644

$$\bar{X} = \frac{644}{161} = 4'$$

$$m = \forall \rho$$

$$m_A = (2)(3)(9)(16) = 864 \text{ slugs}$$

$$m_B = (1)(1)(4)(25) = 100 \text{ slugs}$$

$$\bar{X} = \frac{1.5(864) + 5(100)}{864 + 100} = 1.86'$$

$$\bar{Y} = \frac{4.5(864) + 8.5(100)}{964} = 4.91'$$

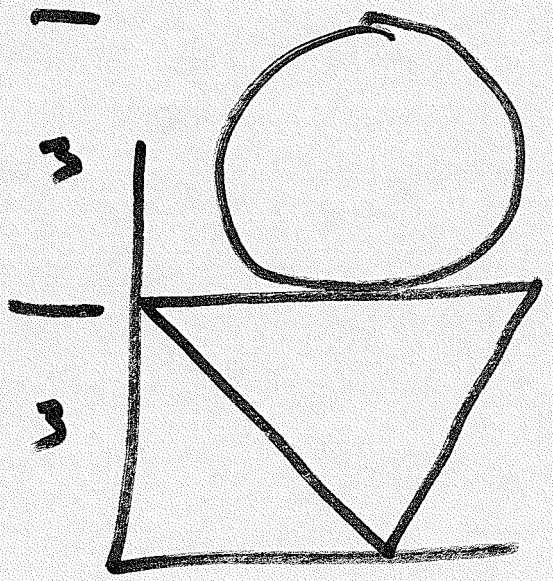
$$\bar{Z} = \frac{1(864) + 1.5(100)}{964} = 1.85'$$

SPHERE $\bar{y} = 3 + \frac{3}{2} = 4.5''$

CONE $\bar{y} = \frac{3}{4}(3) = 2.25''$

$$\bar{y} = \frac{\Sigma m \bar{y}_c}{\Sigma m} = \frac{4.5(1.5) + 2.25(.125}{1.5 + .125}$$

$$\bar{y} = 4.327''$$



55-2

$$a = \frac{\Delta v}{\Delta t}$$

$$= \frac{180 \text{ miles}}{\text{hr}} \Big| \frac{}{60 \text{ sec}} \Big| \frac{1 \text{ hr}}{3600 \text{ sec}} \Big| \frac{5280 \text{ FT}}{1 \text{ mile}}$$

$$= 4.4 \text{ FT/SEC}^2 \rightarrow (A)$$

$$a = \frac{V - V_0}{t} = \frac{(28 - 5)\,\text{Ft/sec}}{} \cdot \frac{33}{2\,\text{min}} \cdot \frac{1\,\text{min}}{60\,\text{sec}}$$

$$a = 8.125\ \text{FT/SEC}^2$$

L7(A)

$$V_0 = \frac{68 \text{ miles}}{1 \text{ hr}} \left| \frac{5280 \text{ FT}}{1 \text{ mi.}} \right| \frac{1 \text{ hr}}{3600 \text{ sec}}$$

$$88 \text{ FT/SEC}$$

$$\text{so } a = \frac{V - V_0}{t} = \frac{0 - 88}{5}$$

$$\boxed{a = -17.6 \text{ FT/SEC}^2}$$

$$S = \frac{1}{2} t (V + V_0)$$

$$= \frac{1}{2} (5)(88)$$

$$S = 220 \text{ FT}$$

55-5

36

$$H = \frac{V_0^2 \sin^2\phi}{2g}$$

$$= \frac{2700^2 \sin^2 45^\circ}{2(32.2)}$$

$$\boxed{H = 56,599 \text{ FT}}$$

$$R = \frac{V_0^2 \sin 2\phi}{g}$$

$$= \frac{2788^2 \sin 98}{32.2}$$

$$R = 226,397.5'$$

55-7

$$V_x = V_0 \cos\phi$$

(3E)

$$V_x = 68 \cos(36.87)$$

$$V_x = 48 \text{ ft/sec}$$

$$t = \frac{s}{V_x} = \frac{72 \text{ ft}}{48 \text{ ft/sec}} = 1.5 \text{ sec}$$

$$V_y = V_0 \sin\phi - g t$$

$$= 68 \sin(36.87) - 32.2(1.5)$$

$$V_y = -12.3 \text{ ft/sec}$$

$$y = V_0 \sin\phi t - \frac{1}{2} g t^2$$

$$= 68 \sin(36.87)(1.5) - \frac{1}{2}(32.2)(1.5^2$$

$$\boxed{y = 17.78'}$$

55-18

$$V = r\omega = r\,2\pi f = \pi d f$$ (4Φ)

$$V = \pi(14\text{in}) \frac{4\text{ rev}}{\text{min}} \left| \frac{1\text{ FT}}{12\text{ in}} \right| \frac{1\text{ min}}{60\text{ sec}}$$

$$\boxed{V = 2.44\ \text{FT/SEC}}$$

56-1

41

$V_t = 60 \text{ mph} = 88 \text{ ft/sec}$

$$\tan\phi = \frac{V_t^2}{g * r_2}$$

$$\tan\phi = \frac{88^2}{(32.2)(6000)}$$

.84 OR **4% → (A)**

$$a = fg$$

$$a = (.2)(32.2)$$

$$a = 6.44 \text{ FT/SEC}^2$$

$$S_{SKID} = \frac{V^2}{2a}$$

$$= \frac{(12.88)^2}{2(6.44)}$$

$$S = 12.88' \rightarrow (A)$$